

REMARKS

The Examiner's comments together with the cited references have been carefully studied. Favorable reconsideration in view of the foregoing amendments and following remarks is respectfully requested.

Claims 1-28 were previously pending in the application. Claims 3, 6-14, and 25-28 have been withdrawn from consideration. Claims 1, 2, 4, 5, and 15-24 have been rejected. Claim 1, the sole non-withdrawn independent claim, is herewith amended. Claim 16 has been canceled. New claim 29 has been added. Claims 1, 2, 4, 5, and 15, 17-24, and 29 are, therefore, presently active and not withdrawn. Favorable reconsideration of the application in view of the following remarks is respectfully requested

Applicants herewith affirms a provisional election with traverse to prosecute the invention of Group I, claims 1-24, and the species in which the porous image-receiving layer is a polyester open cell voided film (claims 1, 2, 4, 5, and 15-24).

In brief, the present invention is directed to a porous inkjet recording element that has been plasma treated on the imaging surface, wherein at least 40 percent elemental carbon, based on the elemental content, is in a surface layer thereof prior to the plasma treatment.

Applicants observed that conventionally for many porous inkjet receivers, there is very little dot spread when printing with pigmented inks. As a result, banding artifacts as well as reduced optical densities occur. These problems could be minimized by increasing to some extent the dot spread of the printed ink. However, Applicants found that plasma treatment of the surface of these porous receivers prior to printing did not in general significantly increase the dot spread when printed with pigmented ink. Unexpectedly, however, Applicants found that plasma treatment of porous receivers containing greater than 40% elemental carbon at the surface did result in significantly increased dot spread and higher print densities.

In fact, Applicants have experimentally shown that plasma-treated inkjet recording elements according to the present invention give improved dot spread, printed densities, coalescence, and drytimes when compared to control elements. For example, a non-porous, plasma treated control receiver showed unacceptable coalescence and drytime results.

Relying on 35 U.S.C. §102(e), the Examiner has rejected claims 1, 2, 4, 5, 15, 27-21, 23, and 24 as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) as obvious over Anagnostopoulous et al. The Examiner states that Anagnostopoulous et al. disclose forming an open cell voided surface layer which may be of polyester through a process including plasma treatment of the surface [0044-0045]. The Examiner also states that Missell et al., which has been incorporated by reference, discloses substrates of polyethylene terephthalate, and that swellable base layers may be formed from polyester.

Applicants respectfully traverse the Examiner's rejection and request reconsideration. Anagnostopoulous et al. do not disclose plasma treatment of a porous image-receiving layer comprising interconnecting voids. Claim 1 has been amended to clarify that the porous image-receiving layer comprises interconnecting pores, as supported by original, now canceled, Claim 16. In contrast, the individual cells of Anagnostopoulous et al. are separated from each other, not forming interconnected pores. Furthermore, the top layer of Anagnostopoulous et al. is not porous, but rather a swellable polymer 10 (shown in Fig. 3B) containing mordant, as stated in paragraphs [0028] and [0030]. In addition, the base of the cell in the recording element of Anagnostopoulous et al. is described in paragraph [0042] as a hydrophilic slow-absorbing layer 110 [shown in Fig. 12B], which is clearly not porous. Moreover, Anagnostopoulous et al. use plasma treatment (specifically, a fluorine plasma etch) to make or form the cells over the image-receiving layer, not to treat the surface of the image-receiving layer or swellable polymer. Finally, Anagnostopoulous et al. disclose the use of a polyester, in paragraph [0045] not for the image-receiving layer, but for the cell walls. The purpose of the cell wall is not to receive the image but to "channel the aqueous ink to the hydrophilic cell base."

Regarding Missell et al., Applicants cannot locate where Missell et al. has been incorporated by reference. In addition, although the Examiner mentions Missell for disclosing substrates of polyethylene terephthalate and swellable base layers formed from polyester, Applicants' image-receiving layer is porous, not swellable, as discussed above.

Relying on 35 U.S.C. §102(e), the Examiner has rejected claims 1, 2, 4, 5 and 16-18 as being anticipated by Ilda et al. The Examiner states that Ilda et al. disclose an inkjet recording paper including a porous resin film that is 30 to 90% thermoplastic resin and 1 to 70% fine inorganic or organic powder. The Examiner further states that the thermoplastic resin may be polyethylene terephthalate, and the porous resin film is subjected to oxidation treatment such as plasma treatment [0106-0107]. Claims 1 and 17-24 also stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ilda et al. alone or in view of applicants' admissions concerning the state of the art. The Examiner states that the primary reference discloses that the porous resin film disclosed therein may be laminated to other materials including thermoplastic film and paper laminate. It is the conclusion of the Examiner that "...it would have been obvious to one of ordinary skill in the art to include these additional layers in the medium of the primary reference for their conventional functions in the art."

Claim 1 has been amended to clarify that the inkjet recording element comprises, as a top layer, a porous image-receiving layer comprising interconnecting voids and an upper surface for receiving an image, the upper surface thereof having been modified by plasma treatment. Support for this amendment is to be found in the original specification, on page 3, lines 23-24.

In contrast, it is clear that Ilda et al. teach surface oxidation treatment of the porous resin film that is not the top layer of the inkjet recording element, but under an ink-receiving layer. Ilda et al. state as follows:

The porous resin film according to the present invention or the laminate containing the same may be subjected to a surface oxidation treatment, if necessary. The surface oxidation treatment sometimes contributes to the improvement in the surface hydrophilicity and absorption properties or improvement in the application properties of the ink-receiving layer or the adhesiveness to the porous resin film. [emphasis added].

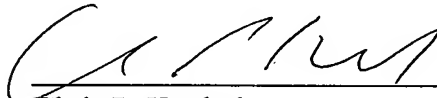
In view thereof, it follows that the subject matter of the claims would not have been obvious in view of Ilda et al. at the time the invention was made.

Applicants have reviewed the prior art made of record and believe that singly or in any suitable combination, they do not render Applicants' claimed invention unpatentable.

In view of the foregoing remarks and amendment, the claims are now believed allowable and such favorable action is courteously solicited.

Should the Examiner consider that additional amendments are necessary to place the application in condition for allowance, the favor is requested of a telephone call to the undersigned counsel for the purpose of discussing such amendments.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'C. P. Konkol', is written over a horizontal line.

Chris P. Konkol
Attorney for Applicant(s)
Registration No. 30,721

CPK:clb
Rochester, NY 14650
Telephone: (585) 722-0452
Facsimile: (585) 477-1148